Amendment to the Claims:

1. (Cancelled)

2. (Cancelled)

3. (Currently Amended) A magnetic resonance imaging method ~~as claimed in Claim 2, wherein~~ for forming an image of an object, wherein

a stationary magnetic field and temporary magnetic fields having a position dependent field pattern are applied,

magnetic resonance signals are acquired by at least one receiver antenna,

spins are excited in a part of the object,

MR signals are acquired in a sub-sampling fashion during application of the position-dependent field patterns, the magnetic resonance signals ~~are~~ being sub-sampled by ~~by~~ means of an array of receiving antennae, ~~and~~

a magnetic resonance image is derived from the sub-sampled magnetic resonance signals, the magnetic resonance image ~~is~~ being derived from the sub-sampled magnetic resonance signals on the basis of the spatial sensitivity profiles of the array of receiving antennae, and

the position dependent field patterns are substantially non-linear, the number N of total field patterns is larger than 3, and at least N – 1 field patterns are independently controllable in field strength.

4. (Currently Amended) [[A]] The method as claimed in Claim [[2]] 3, wherein fold-over ~~artefacts~~ artifacts are distinguished by continuity constraints of the object to be imaged.

5. (Currently Amended) [[A]] The method as claimed in Claim [[2]] 3, wherein fold-over ~~artefacts~~ artifacts are distinguished and discarded by knowledge of the sparsity of the object to be imaged.

6. (Cancelled)

7. (Cancelled)

8. (Cancelled)

9. (Currently Amended) A computer program product stored on a computer usable medium for forming an image ~~by means of the magnetic resonance method,~~ comprising a computer readable program means for causing ~~the~~ a computer to control the execution of:

[[-]]applying a stationary magnetic field and temporary magnetic fields having [[a]] position dependent field patterns relative to 3 spatial dimensions, ~~whereas~~ the magnetic fields ~~are~~ being substantially non-linear and ~~the~~ a number N of total field patterns [[is]] being larger than 3, field patterns with different position dependencies relative to at least one of the dimensions being applied in subsequent data excitement or acquisition repetitions of an imaging sequence,

[[-]]acquiring magnetic resonance signals by at least one receiver ~~antenna~~,

[[-]]exciting spins in a part of the object,

[[-]]acquiring MR signals during application of the position-dependent field patterns,

[[-]]deriving a magnetic resonance image is from the sampled magnetic resonance signals,

[[ ]]controlling at least $N - 1$ field patterns independently in their field strength.

10. (Original) A computer program product as claimed in Claim 9, additionally acquiring the magnetic resonance signals in a sub-sampling fashion and deriving the magnetic resonance image from the sub-sampled magnetic resonance signals.

11. (New) The method according to claim 3, wherein the position dependent field patterns include oscillating field patterns.

12. (New) The method according to claim 3, wherein the position dependent field patterns are encoded in at least four dimensions to acquire image information from a three-dimensional object.

13. (New) The method according to claim 3, wherein the excitation of spins and acquisition of MR signals is repeated during each repetition, temporary magnetic field components with non-linear spatial position field patterns are applied along three axes, a spatial dependency of the field patterns applied along at least one of the axes being different in subsequent repetitions.

14. (New) A computer medium or processor programmed to perform the method according to claim 3.

15. (New) A magnetic resonance imaging apparatus comprising:

a main magnet which generates a main magnetic field through an examination region;

a gradient coil system which applies non-linear magnetic field gradients across the examination region along each of a plurality of preselected axes;

a radio frequency system which excites and manipulates magnetic resonance spins in a part of an object in the examination region;

a receiver which receives magnetic resonance signals from the excited magnetic resonance spins in the examination region;

a reconstruction processor which reconstructs the received magnetic resonance signals into image representations;

a controller which controls the gradient field system to apply the non-linear magnetic field gradients along at least one of the axes with a plurality of different spatial position-dependent field patterns.

16. (New) The apparatus according to claim 15, wherein the controller controls the gradient field system to generate the non-linear magnetic field gradients with a plurality of different position-dependent field patterns along each of the axes.

17. (New) The apparatus according to claim 15, wherein the position dependent field patterns oscillate such that there are non-unique position dependencies, the different field patterns having different position-dependencies whereby the different position dependent field patterns have differing non-unique positions.

18. (New) The apparatus according to claim 15, wherein the controller controls the RF system, the gradient system, and the receiver system to implement an undersampled imaging technique and wherein the reconstruction processor further includes a routine for unfolding folded image representations generated from undersampled received resonance signals.

19. (New) The apparatus according to claim 18, wherein the undersampled imaging technique includes SENSE.

20. (New) The apparatus according to claim 15 wherein the gradient coil system includes N independently controllable gradient coil subsystems for generating magnetic field gradients along the preselected axes, N being greater than the number of preselected axes.

21. (New) The apparatus according to claim 20, wherein there are 3 preselected axes, at least one gradient coil subsystem generates magnetic field gradients along a first of the axes, at least one gradient coil subsystem generates magnetic field gradients along a second of the axes, ad at least two of the independently controllable gradient coil subsystems generate magnetic field gradient components along a third of the 3 axes.